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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LANDRUM, EDWARD F	

ART UNIT	PAPER NUMBER
3724	

MAIL DATE	DELIVERY MODE
12/03/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,431	BLAAUW ET AL.	
	Examiner	Art Unit	
	EDWARD F. LANDRUM	3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10-17 and 25-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-17 and 25-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. Claims 17 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 10/522287. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference is the material used for the cutting blade. Other portions of claim 17 are intrinsic in the process of plasma nitriding and precipitationally hardening a stainless steel.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4-7, 10, 13, 14, 16, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domoto et al (U.S Patent No. 6,354,008), hereinafter Domoto, in view of Oiwa (Japanese Patent No. 60162766), in further view of Rosenhan (U.S Patent No. 5,953,969) in witness of Applicant's Admitted Prior Art, hereinafter AAPA, and further in witness of witness of Liang et al (2001), Blawert et al (1998), Askeland (1994), and Lim (U.S Patent No. 6,662,614).

Domoto teaches (see Figures 1-3, 6, and 7) an electric shaver with a plurality of steel cutting elements coated on all sides of the blade with a nitride based film having a hardness of at least 1000 HV but possibly extending above 1500 HV. The nitride based film is applied to the cutting blade using a plasma CVD method. The cutting blades of Domoto are capable of working in dry or additive type shavers as both are functional equivalents and would have no bearing to how the cutting blades were made as most electric dry shavers are made to still be cleaned by a cleaning solution or water.

Domoto teaches all of the elements of the current invention as stated above except the steel cutting element being a maraging or precipitation hardening steel, said steel being hardened simultaneously with a precipitation hardening process and with plasma nitriding which forms a top layer of super saturated nitrogen and a diffusion layer adjoining the top layer to the hardness of the steel, and the diffusion layer having an original hardness of the steel cutting blades at the center, preferably 200HV or at least 6 times less hard than the top surface layer, the hardness of the diffusion layer decreasing from the outer surfaces of the lemella.

Oiwa teaches (see included translated Constitution) that it is old and well known to apply a nitride layer to a steel electric shaver blade by means of plasma nitriding.

Rosenhan teaches (Col.1, lines 15-23) that while CVD processes for applying strengthening layers to a tool is an option, material deposited on the tool can tear or chip off when the material is used. Furthermore, Rosenhan teaches (Col. 2, lines 19-55) a maraging steel is a good steel for a plasma diffusion process and that a plasma diffusion process includes combining heating the material by precipitation with plasma

nitriding. Furthermore, the hardness of the diffusion layer changes continuously between the two outer layers (Col. 2, lines 34-37). This method creates a tool that wears about 10 times less than other known tools.

It would have been obvious to have modified Domoto to incorporate the teachings of Oiwa, Rosenhan, to use maraging steel for the cutting blades of the electric shaver and apply the nitride layer to the cutting blades of the electric shaver by means of a plasma nitride process combined with precipitation hardening. Maraging steel is a steel that can be easily nitrided and resists wear and crack propogation. Plasma nitriding and precipitation hardening the maraging steel cutting members would make the cutting blades of the electric shaver wear 10 times less than other known tools thereby prolonging the life of the cutting blades. AAPA teaches (Pg. 4, lines 26-28) the act of precipitation hardening the steel can occur prior to or while plasma nitriding the steel and therefore the timing of the two relative to each other lacks criticality. Therefore it would have been an obvious matter of design choice to a person of ordinary skill in the art to have the precipitation hardening occur simultaneously with plasma nitriding, since applicant has not disclosed that a specific timing of the two process relative to each other solves any stated problem or is for any particular purpose, because it has been shown that many methods are equally acceptable, and it appears the cutting element would perform equally well with any specific timing sequence between the precipitation hardening process and the plasma nitriding process.

Domoto does not explicitly state that the electric shaver is a dry shaver but it is inherent that the electric shaver of Domoto is a dry shaver as there is no mention of a lubricant or other liquid used with the shaver.

Regarding claims 1, 7, and 10, claiming the top layer being a uniform hardness, the diffusion layer decreasing in hardness, and the minimum hardness of the diffusion layer being found at the center of the diffusion layer, each of these limitations is intrinsic in the process of plasma nitriding a precipitationally hardened steel. To support this, the examiner has provided four references that teach these facts. Liang et al (2001) teaches (Pg. 6, Col. 1, Paragraph 2) that plasma nitriding a surface makes that surface have a top layer consisting of supersaturated nitrogen. Blawert et al (1998) teaches (Pg. 2, Col. 1, lines 2-5) teaches that plasma nitriding a surface causes a top layer to be formed along with a diffusion layer between the top layer and the material being nitrided. Askeland (1994) teaches (see Figures 5 and 6, the A and B characters have been added by the examiner to the upper Figure because the reproduction was made in black and white) that a diffusion layer is a constantly changing layer formed between the two materials where the two materials exchange atoms. Each edge of the diffusion layer takes properties that abut the edge of the diffusion layer as more of that abutment materials atoms are found there compared to the other material found on the opposite edge of the diffusion layer. Therefore, the minimum hardness of the diffusion layer would be in the center of the two compounds abutting the diffusion layer if both were relatively the same hardness. The non uniform structure created by the combining of atoms of the different compounds would be at its greatest in the center because neither

compound would have a large majority of atoms present. Figures 5 and 6 of Askeland clearly show this point. Lim further teaches (Col. 8, lines 6-8; Figure 8) the point taught in Askeland that a plasma nitrided layer has a hardness that ranges between the original hardness of the cutting tooth below the nitrided layer and the hardness of the coating layer above the nitrided layer.

Regarding claims 4, 13, and 25-27, and the diffusion layer either being 200HV at the center or the top surface layer being at least six times harder than the center of the diffusion layer, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the center of the diffusion layer 200HV or the hardness of the top surface layer at least 6 times harder than the center of the diffusion layer because discovering the optimum or workable hardness of the center of the diffusion layer would have been a mere design consideration based on the type of steel a manufacturer wanted to use. Such a modification would have involved only routine skill in the art to accommodate the steel type requirement. it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges only involves routine skill in the art.

4. Claims 2, 3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Domoto in view of Yamada et al (U.S Patent No. 5,857,260), hereinafter Yamada.

The modified device of Domoto teaches all of the elements of the current invention as stated above except the thickness of the top layer being in the range of 5

μm to 25 μm, and the thickness of the diffusion layer being in the range of 5 μm to 20 μm.

Yamada teaches that the optimal total thickness of hardness layers covering a blade is between 2 μm and 15 μm (Col. 1, lines 66-67; Col. 2, lines 1-5).

It would have been an obvious to have modified the modified device of Domoto to incorporate the teachings of Yamada to make the total thickness of the top layer and the diffusion layer 2 μm to 15 μm to provide for the best cutting conditions for both the outer and inner cutting blades.

Furthermore, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the thickness of the top layer between 5 μm to 25 μm and the thickness of the diffusion layer between 5 μm to 20 μm because discovering the optimum or workable ranges for the thickness of the top layer and the diffusion layer would have been a mere design consideration based on the material properties of both the cutting blade and the nitride based top layer. Such a modification would have involved only routine skill in the art to accommodate the properties of the cutting blade and the nitride based top layer. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Domoto, as stated in section 3, in view of Gerasimov et al (U.S Patent No. 6,584,691), hereinafter Gerasimov.

The modified device of Domoto teaches all of the elements of the current invention as stated above except the electric shaver being an additive type shaver.

Gerasimov teaches (see Figure 39) providing a solid soap additive 116 to an electric shaver for the purpose of improving lubricity as well as condition a user's skin or beard.

It would have been obvious to have modified the device the modified device of Domoto to incorporate the teachings of Gerasimov to provide an additive on the shaver. Doing so would improve lubricity of the shaver as well as condition a user's skin or beard during shaving.

6. Claims 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device and method of Domoto, as stated in section 3, in view of Cole et al (U.S Patent No. 4,259,126), hereinafter Cole.

The modified device and method of Domoto teaches all of the elements of the current invention as stated above except the steel cutting element being austenitic steel

Cole teaches (see Col. 1) teaches that it is old and well known in the razor art to make cutting blades out of austenitic steel.

It would have been obvious to have modified the modified the modified device and method of Domoto to incorporate the teachings of Cole to use austenitic steel for the cutting blades of the electric shaver and apply the nitride layer to the cutting blades of the electric shaver by means of a plasma nitride process. The physical properties of austenitic steel resist wear and crack propogation, and therefore are ideal for cutting blades intended to be used frequently.

Response to Arguments

7. Applicant's arguments filed 10/19/20099 have been fully considered but they are not persuasive.

Regarding page 16 of applicant's arguments examiner has rejected precipitationally hardening the cutting element simultaneously with plasma nitriding as an obvious design choice. Furthermore, the Encarta English Online Dictionary lists a definition of combine to be: "**2.** *transitive verb* **do things simultaneously:** to undertake two or more activities at the same time • *She has successfully combined a career as an attorney and a state senator.*" Based on this definition it is reasonable to state the Rosenhan combining hardening and nitriding to be the act of performing both simultaneously.

Applicant's specification teaches that the timing of the two processes is not critical and would produce the same result, and with no advantage gained from the timing of the two processes it appears to be an obvious design choice.

As previously stated by the examiner, because of the intrinsic properties associated with plasma nitriding, if the hardness of the core steel of Rosenhan had been the same as the hardness of the plasma nitrided outer layer the center of the diffusion layer would have been the least hard. The cited NPL explains this, therefore the location of the least hard portion of the diffusion layer is more dependent on the original hardnesses of both compound layers and is just a product of the diffusion process.

Applicant has employed an old and well known method of plasma nitriding (page 5, line 17), and it does not appear that anything beyond claiming plasma nitriding a steel that has been precipitationally hardened would not be intrinsic in the plasma nitriding process. Applicant is invited to provide an affidavit that scientifically and mathematically states the claimed subject matter is not intrinsic based on the process used and the article receiving the process.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sanderson (U.S Patent No. 3,743,551) teaches elements of the current invention.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD F. LANDRUM whose telephone number is (571)272-5567. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. F. L./
Examiner, Art Unit 3724
11/30/2009

/Boyer D. Ashley/
Supervisory Patent Examiner, Art Unit 3724